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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,985	04/19/2001	Gerald Hoefer	F-6955	1410

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EXAMINER

BRINEY III, WALTER F

ART UNIT	PAPER NUMBER
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2646

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/837,985		HOEFER, GERALD	
	Examiner		Art Unit	
	Walter F. Briney III		2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 17-21 and 33-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12-16, 22, 23, 25, 26, 29-32 and 42 is/are rejected.
- 7) ☒ Claim(s) 8-11, 24, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/23/01</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claims 17-21 and 33-41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12 April 2005.

Applicant's election without traverse of Invention I, to which claims 1-16, 22-32 and 42 are directed, in the reply filed on 12 April 2005 is acknowledged.

Drawings

The drawings are objected to because figures 3, 5a, 5b, 5c, 6a, 6b, 7-1, 7-2, 7-3, 8-1, 8-2, 9, 10, 11a, 11b, 11c, 12 and 13 are not in English. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 24 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claim 1-7, 12-16, 22, 23, 25, 26, 29-32 and 42** are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (US Patent 6,721,357).

Claim 1 is limited to *a method for transforming a signal on a four-wire line which comprises discrete amplitude height values for conversion into a corresponding analog signal with amplitude height values on a two-wire line where said analog signal is intended for a data communication unit connectable to the two-wire line and where said data communication unit has a predefined capability for resolution of the amplitude of*

said analog signal. Zhang discloses a constellation generation and re-evaluation system and method. See Abstract. Figure 4 depicts a client-side modem (10) for use in practicing the system and method of Zhang. In particular, the modem includes a transmission circuit (121) that allows for the transformation of a digital signal containing amplitude height values into an analog signal with height values dictated by a constellation. The client-side modem communicates the transformed digital signal from a four-wire loop to a remote modem (20) over a two-wire subscriber loop (50) using DAC (15) and hybrid (14). As communication proceeds over an analog loop (50) using analog signals, it follows that the receiver located at the central office (30/33) has an inherent predefined resolution. Furthermore, the constellation used in transmitting from the client modem (10) is chosen so that a maximum amount of levels may be detected by the receiving remote modem (20). See column 5, lines 21-41. In addition, the maximum amount of bits that can be transmitted, and, correspondingly, the maximum amount of symbols (i.e. levels) that can be transmitted is preset as a value K. See column, lines 7-20. Therefore, Zhang anticipates all limitations of the claim.

Claim 42 is limited to an apparatus that essentially performs the method steps of claim 1, as covered by the apparatus of Zhang. Furthermore, the apparatus as recited includes means for storing a mapping. This corresponds to the symbol table (11) of Zhang. Therefore, Zhang anticipates all limitations of the claim.

Claim 2 is limited to *the method according to claim 1*, as covered by Zhang. As noted in the rejection of claim 1, the value K as disclosed by Zhang corresponds to the maximum amount of symbols that can be transmitted, and, thus, corresponds to the

maximum number of discernable amplitude height values. See column 6, lines 4-20.

Therefore, Zhang anticipates all limitations of the claim.

Claim 3 is limited to *the method according to claim 1*, as covered by Zhang.

Inherently, some intrinsic number "n" that defines the upper limit of transmission rates bounds the maximum value of K, such that K is a preset range of said number "n."

Therefore, Zhang anticipates all limitations of the claim.

Claim 4 is limited to *the method according to claim 1*, as covered by Zhang. As seen in column 6, lines 21-28, of Zhang, the value of K is set based on the incoming digital bit stream R_i and the total amount of symbols that can be supported in a constellation M_i . In this way, the digital bit stream R_i , which corresponds to the signal (DS), is multiplied by the value M_i , which corresponds to the predefined factor (V), to deduce a remainder K_i . Therefore, Zhang anticipates all limitations of the claim.

Claim 5 is limited to *the method according to claim 1*, as covered by Zhang. The constellation determined according to the method of Zhang corresponds to a factor (V). Therefore, Zhang anticipates all limitations of the claim.

Claim 6 is limited to *the method according to claim 1*, as covered by Zhang. The constellation determined according to the method of Zhang is in part determined according to the minimal difference D_{\min} , and as the constellation corresponds to the factor (V), the factor (V) is determined due to the minimal difference D_{\min} . Therefore, Zhang anticipates all limitations of the claim.

Claim 7 is limited to *the method according to claim 1*, as covered by Zhang. The digital signal (DS) that is transformed by the constellation determined according to the

method of Zhang inherently includes levels set by some characteristic, in this case, a binary encoding. Therefore, Zhang anticipates all limitations of the claim.

Claim 12 is limited to *the method according to claim 1*, as covered by Zhang. As is known in the art of modems, a sequence of digital bits are grouped and mapped to a constellation, such that the currently present amplitude height values of a digital signal (DS) are mapped to a predefined analog amplitude height value. Therefore, Zhang anticipates all limitations of the claim.

Claim 13 is limited to *the method according to claim 12*, as covered by Zhang. As seen in column 6, lines 21-28, of Zhang, the value of K is set based on the incoming digital bit stream R_i and the total amount of symbols that can be supported in a constellation M_i . In this way, the digital bit stream R_i , which corresponds to the signal (DS), is multiplied by the value M_i , which corresponds to the predefined factor (V), to deduce a remainder K_i . Therefore, Zhang anticipates all limitations of the claim.

Claim 14 is limited to *the method according to claim 1*, as covered by Zhang. As expressed by Zhang, the value D_{\min} dictates the distance between symbols used in transmission. When the signal (DS) is transformed using the constellation generated from the value D_{\min} , the resulting transformed amplitude height values will exhibit a predefined accuracy in accordance with D_{\min} . Therefore, Zhang anticipates all limitations of the claim.

Claim 15 is limited to *the method according to claim 1*, as covered by Zhang. While the incoming digital bit stream of Zhang has been corresponded with the signal (DS), it is known that digital bit streams are just a collection of analog signals with one

of two discrete height values. In this way, the digital bit stream of Zhang corresponds to an analog signal as recited. Therefore, Zhang anticipates all limitations of the claim.

Claim 16 is limited to *the method according to claim 1*, as covered by Zhang. Zhang discloses modems (10) and (20) that use m-law and a-law encoding, which means that they are PCM modems. See column 2, line 66, through column 3, line 16. Furthermore, the digital bit stream from the client modem (10) that corresponds to signal (DS) evidences that the client modem (10) is digital. Therefore, Zhang anticipates all limitations of the claim.

Claim 22 is limited to *the method according to claim 1*, as covered by Zhang. Zhang discloses a pair of V.90 modems. See column 2, line 66, through column 3, line 16. While not explicitly disclosed, it is known that V.90 modems perform handshaking before determining constellations. The handshaking procedure corresponds to modem detection. Therefore, Zhang anticipates all limitations of the claim.

Claim 23 is limited to *the method according to claim 1*, as covered by Zhang. The constellation determination procedure of Zhang is performed within the client modem (10), which corresponds to a network termination unit as it terminates a network connection. See column 4, lines 43-48. Therefore, Zhang anticipates all limitations of the claim.

Claim 25 is limited to *the apparatus according to claim 42*, as covered by Zhang. As is known in the art of modems, a sequence of digital bits are grouped and mapped to a constellation, such that the currently present amplitude height values of a digital signal

(DS) are mapped to a predefined analog amplitude height value stored in a table (11).

Therefore, Zhang anticipates all limitations of the claim.

Claim 26 is limited to *the apparatus according to claim 25*, as covered by Zhang. As seen in column 6, lines 21-28, of Zhang, the value of K is set based on the incoming digital bit stream R_i and the total amount of symbols that can be supported in a constellation M_i . In this way, the digital bit stream R_i , which corresponds to the signal (DS), is multiplied by the value M_i , which corresponds to the predefined factor (V), to deduce a remainder K_i . Therefore, Zhang anticipates all limitations of the claim.

Claim 29 is limited to *the apparatus according to claim 42*, as covered by Zhang. The constellation determination procedure of Zhang is performed within the client modem (10), which corresponds to a network termination unit as it terminates a network connection. See column 4, lines 43-48. Therefore, Zhang anticipates all limitations of the claim.

Claim 30 is limited to *the apparatus according to claim 42*, as covered by Zhang. Zhang discloses a pair of V.90 modems. See column 2, line 66, through column 3, line 16. While not explicitly disclosed, it is known that V.90 modems perform handshaking before determining constellations. The handshaking procedure corresponds to modem detection. Therefore, Zhang anticipates all limitations of the claim.

Claim 31 is limited to *the apparatus according to claim 30*, as covered by Zhang. Zhang discloses modems (10) and (20) that use m-law and a-law encoding, which means that they are PCM modems. See column 2, line 66, through column 3, line 16. Furthermore, the digital bit stream from the client modem (10) that corresponds to signal

(DS) evidences that the client modem (10) is digital. Therefore, Zhang anticipates all limitations of the claim.

Claim 32 is limited to *the apparatus according to claim 31*, as covered by Zhang. The logic circuit (131) of the client modem (10) essentially corresponds to a control unit. Therefore, Zhang anticipates all limitations of the claim.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

2. **Claims 8-11, 27 and 28** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 8 is limited to *the method according to claim 4*, as covered by Zhang. There is simply no evidence within Zhang that a small factor is applied to the signal (DS). Thus, claim 8 is allowable over Zhang.

Claims 9-11 depend on claim 8, and are allowable over Zhang for at least the same reasons.

Claim 27 is limited to *the apparatus according to claim 26*, as covered by Zhang. While Zhang does provide a constellation table (11), this has already been corresponded with the means for storing a mapping. Thus, claim 27 is allowable over Zhang.

Claim 28 is limited to *the apparatus according to claim 42*, as covered by Zhang. As already indicated in the treatment of claim 27, there is no further constellation storage means within the system of Zhang. Thus, claim 28 is allowable over Zhang.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SINH TRAN
SUPERVISORY PATENT EXAMINER

WFB
9/6/05